EXPERIMENTAL CELL RESEARCH

Published under the auspices of

THE INTERNATIONAL SOCIETY FOR CELL BIOLOGY

EXECUTIVE EDITORS

T. CASPERSSON · T. GUSTAFSON · D. MAZIA

ASSOCIATE EDITOR

N. R. RINGERTZ

ADMINISTRATIVE EDITOR

VERA RUNNSTRÖM-REIO

EDITORIAL OFFICE

KAROLINSKA INSTITUTET, S-104 01 STOCKHOLM 60, SWEDEN

EDITORS

M. ABERCROMBIE · W. BERNHARD · J. BRACHET · M. CHÈVREMONT · A. ENGSTRÖM
E. FAURÉ-FREMIET · G. FOLEY · G. KLEIN · O. LINDBERG · G. MONTALENTI
A. MOSCONA · J. PAUL · SIR JOHN RANDALL · J. RUNNSTRÖM
F. O. SCHMITT · C. H. WADDINGTON · R. W. G. WYCKOFF · E. ZEUTHEN

VOLUME 58 · 1969

ACADEMIC PRESS, New York and London

COPYRIGHT, © 1969, BY ACADEMIC PRESS INC.

All Rights Reserved

No part of this book may be reproduced in any form, by photostat, microfilm, or any other means, without written permission from the publishers

Printed in Sweden by
Almqvist & Wiksells Boktryckeri AB
Uppsala 1969

TABLE OF CONTENTS

NUMBER 1, NOVEMBER 1969

Shneyour, A, Ben-Shaul, Y & Avron, M, Structural changes in *Euglena gracilis* grown autotropically in the light with 3,(3,4-dichlorophenyl)-1,1-dimethyl urea (DCMU) 1

Eastwood, C J & Mun, A M, Effect of pore size of membrane filter barrier on growth stimulation of embryonic spleen graft by adult chicken spleen 10

Young, C W, Hendler, F J & Karnofsky, D A, Synthesis of protein for DNA replication and cleavage events in the sand dollar embryo 15

Seligy, V & Miyagi, M, Studies of template activity of chromatin isolated from metabolically active and inactive cells 27

Jagger, J, Prescott, D M & Gaulden, M E, An ultraviolet microbeam study of the roles of nucleus and cytoplasm in division delay, killing, and photoreactivation of *Amoeba proteus* 35

Morimoto, H & James, T W, Effects of growth rate on the DNA content of *Astasia longa* cells 55

Love, R, Studzinski, G P & Walsh, R J, Nuclear, nucleolinar and cytoplasmic acid phosphatases in cultured mammalian cells 62

Ashworth, J M, Duncan, D & Rowe, A J, Changes in fine structure during cell differentiation of the cellular slime mould *Dictyostelium discoideum* 73

Galjaard, H & Bootsma, D, The regulation of cell proliferation and differentiation in intestinal epithelium. II. A quantitative histochemical and autoradiographic study after low doses of X-irradiation 79

Stewart, M E & Terepka, A R, Transport functions of the chick chorio-allantoic membrane. I. Normal histology and evidence for active electrolyte transport from the allantoic fluid, in vivo 93

Terepka, A R, Stewart, M E & Merkel, N, Transport functions of the chick chorio-allantoic membrane. II. Active calcium transport in vitro 107

Murphree, S, Stubblefield, E & Moore, E C, Synchronized mammalian cell cultures. III. Variation of ribonucleotide reductase activity during the replication cycle of Chinese hamster fibroblasts 118

Cross, M H & Brinster, R L, Trans membrane potential of the rabbit blastocyst trophoblast 125

Caspersson, T, Zech, L, Modest, E J, Foley, G E, Wagh, U & Simonsson, E, Chemical differentiation with fluorescent alkylating agents in *Vicia faba* metaphase chromosomes 128

Caspersson, T, Zech, L, Modest, E J, Foley, G E, Wagh, U & Simonsson, E, DNA-binding fluorochromes for the study of the organization of the metaphase nucleus 141

Brinster, R L, Incorporation of carbon from glucose and pyruvate into the preimplantation mouse embryo 153

Sigdestad, C P, Bauman, J & Lesher, S W, Diurnal fluctuations in the number of cells in mitosis and DNA synthesis in the jejunum of the mouse 159

PRELIMINARY NOTES

Shainberg, A A, Yagil, G & Yaffe, D, Control of myogenesis in vitro by Ca^{2+} concentration in nutritional medium 163

Dowben, R M, Lynch, P M, Nadler, H L & Hsia, D Y, Polyribosomes from L cells 167

Hare, J D, Reversible inhibition of DNA synthesis by the arginine analogue canavanine in hamster and mouse cells in vitro 170

Michl, J & Svobodová, J, Primary function of the growth-promoting α-globulin in cell culture 174

Rothman, A H, Alcian blue as an electron stain 177

Mandel, T, Byrt, P & Ada, G L, A morphological examination of antigen reactive cells from mouse spleen and peritoneal cavity 179

Ohara, H & Terasima, T, Variations of cellular sulfhydryl content during cell cycle of HeLa cells and its correlation to cyclic change of X-ray sensitivity 182

Kay, J E, The role of the stimulant in the activation of lymphocytes by phytohaemagglutinin 185

Macmanus, J P & Whitfield, J F, Stimulation of deoxyribonucleic acid synthesis mitotic activity of thymic lymphocytes by cyclic adenosine 3′5′-monophosphate 188

Siracka, E, Littbrand, B & Révész, L, Effect of oxygen on the recovery of lethal and non-lethal radiation damage 191

NUMBERS 2–3, DECEMBER 1969]

Morimoto, H & James, T W, Sulfate-controlled synchrony of *Astasia longa* 195

Cave, M D & Allen, E R, Synthesis of nucleic acids associated with a DNA-containing body in oocytes of *Acheta* 201

Chevaillier, Ph, Etude au microscope électronique de l'interaction de l'acide désoxyribonucléique et des polyamines 213

Nelles, S & Parthier, B, Protein synthesis in sterile chloroplasts from *Lemna minor* L. A contribution to the role of bacterial contamination 225

Haussler, M R, Thomson, W W & Norman, A W, The isolation of purified nuclear and chromatin fractions from chick intestinal mucosa 234

Asao, T, Behaviour of histones and cytoplasmic basic proteins during embryogenesis of the Japanese newt, *Triturus pyrrhogaster* 243

Keast, D & Birnie, G D, An in vitro method for studying nucleic acid metabolism in murine peritoneal macrophages 253

Emmerich, H, Anreicherung von tritiummarkier-

tem Ecdyson in den Zellkernen der Speicheldrüsen von *Drosophila hydei* 261
Wallis, C, Ver, B & Melnick, J L, The role of serum and fetuin in the growth of monkey kidney cells in culture 271
Hekkelman, J W & Moskalewski, S, The effect of parathyroid extract on the alkaline phosphatase activity of the surface of isolated bone cells 283
Cornell, R, Cell-substrate adhesion during cell culture. An ultrastructural study 289
Turkington, R W, Homogeneous differentiation of mammary alveolar cells 296
Smetana, K, Gyorkey, F, Gyorkey, P & Busch, H, On the ultrastructure of nucleoli in human leukemic myeloblasts 303
Epel, D, Does ADP regulate respiration following fertilization of sea urchin eggs? 312
Chopra, D P & Simnett, J D, Demonstration of an organ-specific mitotic inhibitor in amphibian kidney. The effects of adult *Xenopus* tissue extracts on the mitotic rate of embryonic tissue (in vitro) 319
Imondi, A R, Balis, M E & Lipkin, M, Changes in enzyme levels accompanying differentiation of intestinal epithelial cells 323
Naglee, D L, Maurer, R R & Foote, R H, Effect of osmolarity on in vitro development of rabbit embryos in a chemically defined medium 331
Darley, W M & Volcani, B E, Role of silicon in diatom metabolism. A silicon requirement for deoxyribonucleic acid synthesis in the diatom *Cylindrotheca fusiformis* Reimann and Lewin 334
Goode, D & Roth, L E, The mitotic apparatus of a giant ameba. Solubility properties and induction of elongation 343
Blomgren, H, The influence of the bone marrow on the repopulation of the thymus in X-irradiated mice 353
Peterson, J A & Rubin, H, The exchange of phospholipids between cultured chick embryo fibroblasts and their growth medium 365
Weiss, L & Clement, K, Studies on cell deformability. Some rheological considerations 379
Desai, L S, Takakusu, A, McCoy, T A, Cohen, J L & Foley, G E, Human leukemic cells. Actinomycin D-resistant biosynthesis of RNA by isolated nuclei 388
Pontén, J, Westermark, B & Hugosson, R, Regulation of proliferation and movement of human glia-like cells in culture 393
Epifanova, O I, Smolenskaya, I N, Sevastyanova, M V & Kurdyumova, A G, Effects of actinomycin D and puromycin on the mitotic cycle in synchronized cell culture 401
Nečas, O, Kopecká, M & Brichta, J, Interpretation of surface structures in frozen-etched protoplasts of yeasts 411
Goshima, K, Synchronized beating of and electrotonic transmission between myocardial cells mediated by heterotypic strain cells in monolayer culture 420

PRELIMINARY NOTES

Mears, D C, Relationship between membrane potential and metabolic activity of osteoblasts 427
Hall, R G, Jr, DNA synthesis in organ cultures of the hamster cheek pouch. Inhibition by a homologous extract 429
Tsuzuki, J, Labeled RNA in isolated rat spleen nuclei 431
Darżynkiewicz, Z, Gledhill, B L & Ringertz, N R, Changes in deoxyribonucleoprotein during spermiogenesis in the bull. ^{3}H-actinomycin D binding capacity 435
Flaxman, B A, Revel, J P & Hay, E D, Tight junctions between contact-inhibited cells in vitro 438
Clarke, P R & Hill C R, Biological action of ultrasound in relation to the cell cycle 443
Kerkof, P R, Smith, S, Gagné, H T, Pitelka, D R & Abraham, S, Nonviability of sodium tetraphenylboron-dissociated cells 445
Abstracts from the VI meeting of the Nordic society for cell biology, Reykjavík, Iceland, August 4–6, 1969 449
Author index 469
Subject index 470